

**DRILL BIT HAVING AN IMPROVED SEAL AND
LUBRICATION METHOD USING SAME**

ABSTRACT OF THE DISCLOSURE

A drill bit (100) for drilling a wellbore that traverses subterranean formations includes a drill bit body (106) having a plurality of journal pins (112), each having a bearing surface (128), and a rotary cutter (104) rotatably mounted on each journal pin (112), each rotary cutter (104) including a bearing surface (126). A pressure-compensated reservoir (130) is in fluid communication with the bearing surfaces (126, 128) and has a lubricant therein. A seal element (144) is positioned between each journal pin (112) and rotary cutter (104) and retains the lubricant in the bearing surfaces (126, 128). The seal element (144) is formed from a nanocomposite material including a polymer host material and a plurality of nanostructures.